Detailed Functional Classification Criteria

Development of new and/or changes of existing functional classifications is based on an evaluation of the following criteria:

- Type and magnitude of travel generators.
- Route feasibility and directness of travel.
- Traffic characteristics and trip length.
- Spacing between types of functional classes.
- Continuity of various functional classes.
- Multiple service capability (accommodation of other modes of transportation).
- Relationships of functional classes to transportation plan(s).
- Miles and travel classification control values.
- Integration of classifications of adjoining jurisdictions.

Travel Generators

Any facility that creates or attracts vehicular traffic movements is a travel generator. The travel generators to be used in the classification process have been ranked and the parameters for each functional class have been established. Listed below are the travel generators and the parameters to be used in the functional classification process.

Population Generators

A population generator is defined as any designated urbanized or urban area or incorporated city or town not within an urban area. The population of a place generally reflects its economic importance and capacity for generating and attracting travel; therefore, the greater the population, the higher the classification of the facility serving it. Generators of similar population and economic importance should be served by routes of the same functional classification. The functionally classified network required for connecting the appropriate population generators has been established as follows:

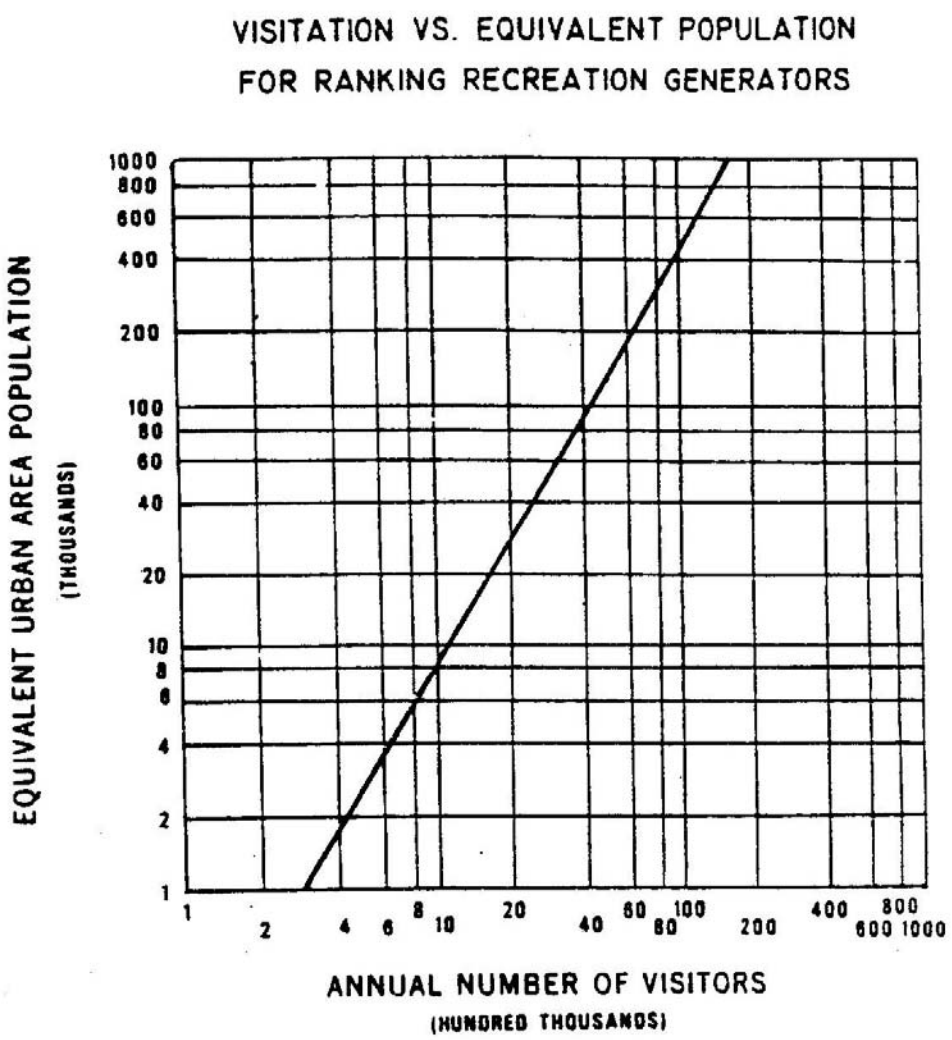
	Functional Classification/Population			
			Collectors	
Area Type	*Principal Arterials*	*Minor Arterials*	*Major*	*Minor*
Rural	over 30,000	10,000 -- 30,000	1,500 -- 10,000	under 1,500
Urban[a]	over 10,000	5,000 -- 10,000	under 5,000	

[a]In the urbanized and urban areas, consideration is to be given for connecting only those population generators within the established federal urban area boundary.

Recreational/Cultural Generators

These traffic generators are used by society during its leisure time for recreational and cultural purposes. Included are parks, beaches, national and state forests, civic centers, sports arenas, historical sites and monuments, outdoor theaters, state and county fairgrounds, and other facilities. For this type of travel generator, annual visitations are converted to population equivalencies.

If several recreational travel generators are located closely together or can be served by only one possible route, such as in a coastal peninsula or mountainous area, the visitations may be combined in the ranking process. Annual recreational generator visitations are to be reduced to a population equivalency by the following graph. Enter the chart at the bottom with the appropriate number of annual visitations and read on the left the population equivalency at the point where the vertical visitation line intersects the curve. Enter this population equivalency value into the appropriate area of the population rankings (see following table).



Industrial Generators

Industrial generators are facilities having as their prime function the manufacture and/or processing of material and goods. With few exceptions, most industrial generators will be contained within or in close proximity to urban areas where transportation modes for the processed goods as well as an adequate labor force are available. The impact of the industrial generators must be considered in the urban areas where they exist, while rural classification evaluation may in most cases disregard this element. It is to be considered in the functional classification of rural facilities when a high level of activity is maintained over a reasonably long period of time, e.g., the hauling of forest and/or agricultural products.

The following subcategories and employment figures are to be used in the evaluation of industrial generators.

- Large — a complex with an aggregate employment in excess of 3,000.
- Medium — a complex with an aggregate employment between 1,000 and 3,000.
- Small — a complex or facility with employment less than 1,000.

Commercial Generators

Included in this category are the central business district, shopping centers, airports, port and railway warehousing, and terminals. Commercial generators are also storage or warehousing areas from which distribution is made to retail outlets and includes processing plants such as fruit packing and storage warehouses and creameries. An area to be considered within this category must be definable with concentrated retail goods and personal services outlets, distribution centers or processing plants, or a combination thereof. The following subcategories and parameters are to be used in the evaluation of commercial generators.

Shopping Centers and Central Business Districts (CBD)

- Regional — an area with three or more department stores and 75 or more support retail and/or personal service outlets.
- Community an area with at least one department store and between 25 and 75 support retail and/or personal service outlets.
- Neighborhood — an area having at least one supermarket as the major outlet and other facilities limited to day-to-day needs and personal services.

Ports and/or Railway Terminals

- Major — those facilities handling in excess of 4,000,000 tons annually.
- Minor — those facilities handling between 1,000,000 and 4,000,000 tons annually.
- Other — those facilities handling between 250,000 and 1,000,000 tons annually

Airports — The terms and parameters listed are extracts from the report of the State Aeronautics Commission for the establishment of the Statewide Airport Plan.

- Primary — airports handling over 1,000,000 passenger boardings, or 250,000 aircraft operations (take offs or landings), or 50,000 tons of air cargo annually.

- Secondary — airports handling between 50,000 to 1,000,000 passenger boardings, or 100,000 to 250,000 aircraft operations, or 5,000 to 50,000 tons of air cargo annually.

- Feeder — airports handling less than 50,000 passenger boardings, or 100,000 aircraft operations or 5,000 tons of air cargo annually.

Governmental Generators

This group of travel generators includes military bases, colleges, universities, governmental administrative complexes, and others. For military establishments, a combination of military and civilian resident population and the employed civilian support personnel should be considered in estimating population.

For defining the population of civil (city, county, state and federal) administrative complexes, consider those personnel whose main function is performed within the complex.

Educational/Institutional facilities are universities, colleges, vocational and technical institutes, schools, hospitals, penal institutions, etc. Population values are given as the appropriate aggregate of on-campus students, staff, patients, inmates and support personnel.

The size of governmental generators to be served by each functional class has been established as indicated in the table below:

Guidelines for Government Generators

Type of Travel Generator	*Functional Classification/Population*		
	Principal Arterial	*Minor Arterial*	*Collector*
Military (urban)	over 20,000	10,000 -- 20,000	under 10,000
Civil (urban)	over 1,500	100 -- 1,500	under 100
Educational/ Institutional (urban)	over 5,000	1,000 -- 5,000	under 1,000

Feasibility of Route and Directness of Travel

The feasibility of route and directness of travel are to be considered where a choice of routes between areas has less than a 10 percent distance differential. The higher functional classification is to be assigned to the route having the larger volume of traffic, higher degree of development, and ability to accommodate further development along the existing alignment.

Traffic Characteristics and Trip Length

The term traffic characteristic as used herein is more clearly associated with trip purpose rather than such traffic composition measures as percentage of trucks, pickups, passenger vehicles, etc. Basic information for evaluating this element is data obtained in origin-destination studies. When such data are not available, the evaluation is to be made on the basis of the service the route is intended to provide.

In rural areas the facilities providing for the interstate and statewide travel desire, will be the principal arterials in most, if not all, cases. The major portion of interregional travel desire is considered to be served by minor arterials. These facilities providing for interregional travel desire will generally be of substantial length and may entirely cross any single region, and thus provide the interregional service for relatively long trip desire. Major collectors provide for the interregional and intercounty travel desire and serve as the major feeder system to the principal and minor arterials. Minor collectors provide for the major portion of the intracounty travel desire, not satisfied by higher classifications, on a facility with a higher design than that on the local access roads. The intended service in rural areas is as follows:

Rural Functional Classification Guidelines -- Type of Travel Service

Functional Classification	*Principal Arterial*	*Minor Arterial*	*Collector*	
			Major	*Minor*
Type of travel	Interstate and Statewide	Interregional	Intraregional and Intercounty	Intracounty

This classification element is of little or no value in the evaluation process of the urban areas of 5,000 to 50,000 because of the relatively small land area within the urban boundary. In urbanized areas (over 50,000 population) consideration is to be given the trip length within the area and the connections required between travel generators in answer to travel desire as follows:

Urban and Urbanized Areas Functional Classification Guidelines -- Type of Travel Service

Functional Classification	*Principal Arterial*	*Minor Arterial*	*Collector*
Type of travel	Through trips (rural to rural) and long distance internal trips between travel generators of like value	Internal trips between travel generators of like value in relatively close proximity	Intraurban and local trips to a higher classified facility

Spacing

In rural areas, the spacing of the principal and minor arterials is dictated by travel desire and generator demands. The collectors are spaced such that all identifiable and ranked travel generators are within a reasonable driving time of a higher classification road and all county seats not served by either a principal or minor arterial are served by a rural major collector.

In urban or urbanized areas, the spacing of various functional classifications is usually less in order to accommodate traffic flow in the CBD and between the CBD and industrial, commercial, and residential areas. The values given below indicate the minimum distance between facilities of like classification. The prime consideration in assigning functional classification is the service to the travel generators with spacing as a qualifier toward the accomplishment of service.

Urban and Urbanized Areas Guideline for Functional Classification/Spacing

	Functional Classification/Spacing		
Location	*Principal Arterial*	*Minor Arterial*	*Collector*
CBD	1/2 mile	1/8 -- 1/2 mile	1/4 mile to higher
Urban residential	1 mile	1/2 -- 1 mile	classified facility in all
Suburban and urban Fringe	1 -- 5 miles	1 -- 3 miles	urban regions[a]

[a]In some CBD's and in other areas of like development, the spacing of collectors may be less to incorporate the downtown circulation system including consideration of adjacent streets which may act as one-way couplets.

System Continuity

The principal and minor arterial functional classifications must be continuous, without any breaks, except that geographical or topographic conditions may otherwise dictate. In isolated cases, an arterial may have a beginning point at a specific travel generator (population or recreational area), but its ending termini must be at a junction with an equal or higher functionally classified facility. Continuity for urban collectors and rural major collectors is desirable and should be obtained if possible. System continuity is generally not necessary for the rural minor collectors.

Multiple Service Capability

Multiple service capability is defined as the capability of a route to accommodate other modes of transportation (movement of people or goods) on the same facility *without a* significant impact on normal traffic flow, This classification element need not be considered in the evaluation of rural facilities, except when they are in close proximity to the urban areas.

In urban areas the factors which should be considered in the evaluation of existing facilities are: (1) the impact other rubber tired transportation modes (buses, tucks, etc.) have on the normal traffic flow; (2) the capability of the route for improvement to better accommodate other modes; (3) the ability of other transportation mode use to satisfy the demand or desire and accomplish the objectives by current routings; and (4) consideration of an alternate route which would or could be improved to better accommodate other transportation modes. The route or routes, which would best accommodate other transportation modes, should generally have a higher functional class assignment than the alternate routes with all other factors in the evaluation being equal.

Relationship of Route to Transportation Plan

The relationship of routes to the regional or local transportation plan can be considered as an element in the classification evaluation process only where transportation plans have been developed. The State Transportation Plan is used in evaluating the state highway system. Where comprehensive long-range planning has been performed, the higher functional classifications should be assigned to those routes having the greatest importance in the plan. The proper evaluation and assignment of functional class to the existing facilities indicates the routes performing the higher functions or service under existing conditions. In effect, this produces a current transportation plan, which does not take into consideration future growth, land use, and zoning restrictions; however, the classified facilities will generally be the "backbone" of the future transportation plan.

Classification Controls

In order to obtain balanced functionally classified systems, both rural and urban, two primary controls have been established: (1) miles by functional class; and (2) travel by functional class. In establishing these controls, it is not the intent to restrict the miles and travel within an urban area, county, or planning region to the established parameters but rather to establish statewide controls when the mileage and travel is aggregated on a rural area and urbanized and urban area basis. Geographic, topographic, and land use factors in the rural areas, coupled with size in the urban areas, will play a large part in the determination of functional classifications. Percentage parameters have been established on a statewide basis for aggregating the rural and urban systems by functional class as follows:

Guidelines on Extent of Rural Functional Systems

	Range (percent)	
System	*VMT*	*Miles*
Principal arterial system	40 -- 50	2 -- 4
Principal arterial *plus* minor arterial road systems	45 -- 75	6 -- 12
Collector road system	20 -- 35	20 -- 25
Local road system	5 -- 20	65 -- 75

Extent of Mileage and Travel on Urban Systems

The following table contains guideline ranges of travel volume (VMT) and mileage of each of the four functional systems for urban and urbanized areas. Systems developed for each area using the criteria will usually fall within the percentage ranges shown.

Guidelines on Extent of Urban Functional Systems

	Range (percent)	
System	*VMT*	*Miles*
Principal arterial system	40 -- 65	5 -- 10
Principal arterial *plus* minor arterial street systems	65 -- 80	15 -- 25
Collector street system	5 -- 10	5 -- 10
Local street system	10 -- 30	65 -- 80

When the mileage of the functionally classified facilities exceeds these percentages based upon the total mileage within the urban area, county, or planning region, the reasoning and rationale for the excess is to be documented and supporting information furnished. In developing these data, the following instructions are to be adhered to:

1. Rural functionally classified mileage is to include the classified facilities in rural and unincorporated areas and the classified facilities within incorporated towns or cities of 0 to 4,999 population that are not included within a federal aid urbanized or urban area boundary.

2. Urban functionally classified mileage is to include all classified facilities within incorporated cities and towns and unincorporated areas lying within the established federal urbanized or urban boundaries.

System Integration

The final step in the classification procedure is to assemble all areas which have had the streets, roads, and highways individually classified (urban areas, counties, or regions) and to review the individual products as a whole. This final step determines the changes in functional class assignment of routes that cross the federal aid urban and/or county boundaries and consistency of functional classification with those of adjoining states and provinces. With the resolution of these changes by the involved agencies, a unified statewide classification of streets, roads, and highways with the required continuity is established.

FEDERAL FUNCTIONAL CLASSIFICATION CODES FOR RURAL AREAS

01 Rural Principal Arterial - Interstate

02 Rural Principal Arterial - Other

06 Rural Minor Arterial

07 Rural Major Collector

08 Rural Minor Collector

09 Rural Local Access

FEDERAL FUNCTIONAL CLASSIFICATION CODES FOR URBAN AREAS

11 Urban Principal Arterial - Interstate

12 Urban Principal Arterial - Other Freeways and Expressways

14 Urban Principal Arterial - Other

16 Urban Minor Arterial

17 Urban Collector

19 Urban Local Access

Table 1. Rural Functional Classification Criteria

	Functional Classification			
			Collector	
Item	Principal Arterial	Minor Arterial	Major	Minor
1. Mileage (% total rural miles)	2--4	4--8	2--25	
2. Daily vehicle miles (DVM) -- percent Accumulative	40--50	20--35	15--25	
3. Travel Generators				
a. Population (persons)	> 30,000	10,000 -- 30,000	1,500 -- 10,000	< 1,500
b. Recreational/cultural (population equivalencies)[a]	> 30,000	10,000 -- 30,000	1,500 -- 10,000	< 1,500
4. Trip length	Interstate and statewide	Interregional	Interregional and intercounty	Intracounty
5. System continuity[b]	Required	Required	Desirable	
6. Directness of travel and feasibility of route	When alternate routes are available in the travel corridor, the route with the highest design standard, greatest cost benefit, and differential not greater than 10 percent in mileage is to be assigned the higher functional classification.			
7. Relation to Transportation Plan	To be considered	To be considered	To be considered	

[a]See Appendix B for the process used to equate visitations to population.

[b]Subject to specific conditions such as natural barriers.

> greater than

< less than

Table 2. Urban Functional Classification Criteria

	Functional Classification		
Item	*Principal Arterial*	*Minor Arterial*	*Collector*
1. Mileage (percent of total urban miles)	5 -- 10	10 -- 15	5 -- 10
2. Daily vehicle miles of travel (DVM) - percent accumulative	40 -- 65	15 -- 25	5 – 10
3. Travel generators:			
a. Population people	> 10,000	5,000 -- 10,000	< 5,000
b. Industrial employees	3,000 employees	1,000 -- 3,000 employees	1,000 employees
c. Commercial			
Shopping centers and CBD's - (appendix B)	Regional	Community	Neighborhood
Ports and terminals annual tons	> 4,000,000	1,000,000 -- 4,000,000	250,000 -- 1,000,000
Airports – (appendix B)	Primary	Secondary	Feeder
d. Recreational/cultural[a] pop. equiv.	> 10,000	5,000 -- 10,000	< 5,000
e. Governmental:			
Military population	> 20,000	10,000 -- 20,000	< 10,000
Civil population	> 1,500	100 -- 1,500	< 100
Educational/institutional population	> 5,000	1,000 -- 5,000	< 1,000
4. Feasibility of route and directness of travel	When alternate routes are available in the travel corridor, the route with the highest design standard, greatest cost benefit, and a differential not greater than 10 percent in mileage is to be assigned the higher functional classification.		
5. Traffic characteristics and trip length	b	c	D
6. Spacing (miles)	1/2 in CBD; 1 in urban residential; 1 -- 5 in suburban and urban fringe	1/8 -- 1/2 in CBD; 1/2 -- 1 in urban; 1 -- 3 in suburban and urban fringe	Not less than 1/4 mile from higher Classified arterials
7. System continuity[e]	Required	Required	Desirable
8. Multiple Services	Surface type mass transit systems and Intermodal connections	Limited transit services	Not applicable
9. Relation to Transportation Plan	To be considered	To be considered	To be considered

[a]Population or population equivalencies (see Appendix B)

[b]Through trips and long distance internal trips between travel generators of like value > greater than

[c]Intergenerator trips between generators of like value in relatively close proximity

[d]Intraurban and local trips to higher classified facilities < less than

[e]Subject to specific conditions such as natural barriers